

The North Dakota Underground Storage Tank (UST) Rules require that all UST systems be checked for leaks on at least a monthly basis. Interstitial monitoring is a method of leak detection that can be used on double-walled tanks.

As of January 1, 2009, all new or replacement USTs and piping installed in North Dakota must be double-walled. Double-walled tanks are essentially a tank within a tank. They are designed to prevent releases into the environment by containing fuel in the “interstitial space” between the two tanks if a leak occurs from the inner tank. When the interstitial space is monitored continuously and alarms are attended to as they occur, fuel can be prevented from reaching the environment.

## ***Tank Interstitial Monitoring***

Double-walled tanks can be fashioned with both walls made of either steel or fiberglass or with an inner steel tank and an outer containment vessel constructed of fiberglass or polyethylene plastic, generally known as “jacketed” tanks.

Interstitial monitoring detects the presence of liquid in the interstitial space. Double-walled tanks can be designed for continuous electronic monitoring or monthly visual inspection of the interstitial space for signs of leaks.



The bottom of the vertical monitoring pipe on the end of this double-walled steel tank connects to the interstitial space.

## Continuous Electronic Monitoring

If a double-walled tank is monitored for leaks using an automatic leak-sensing device, interstitial monitoring is performed using sensors that are connected to an automatic tank gauge (ATG). The ATG continuously monitors for leaks and also serves as an alarm console for the sensors. Sensors will trigger a visual or audible alarm at the ATG whenever the sensor detects liquid.

Oftentimes sensors cannot tell the difference between fuel and water and only alert the operator that a liquid is present. Alarms must be investigated to determine the cause.



*Above:* Sensor for monitoring of double-walled tanks. *Below:* The sensor after being installed. The wires are for reporting back to the automatic tank gauging system.

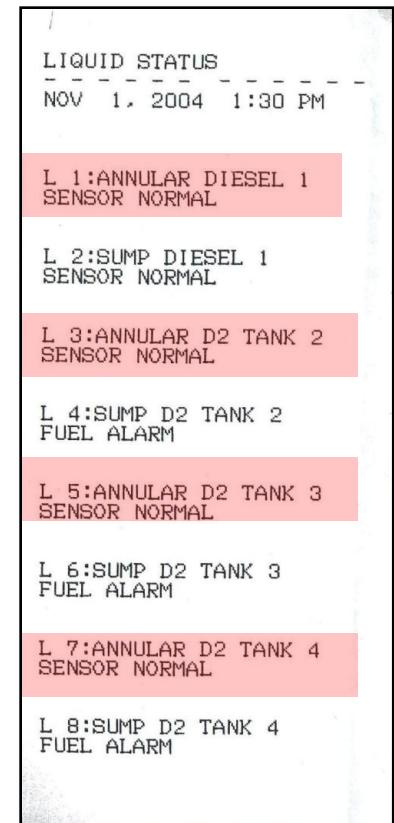


## Continuous Electronic Monitoring

Most ATGs or leak detection consoles indicate alarms with audible beeping or a horn or an illuminated red light. Systems with digital displays also describe the alarm (e.g., L1: Fuel Alarm). The sensor location with the sensor identification numbers or label should be posted close to the ATG so it can be quickly determined which part of the tank system is causing the alarm.

If the ATG or leak detection console is in alarm, take the following steps:

- Investigate to determine whether fuel or water has triggered the alarm.
- Contact a service technician immediately to determine the cause of the leak.
- Report confirmed fuel leaks to the North Dakota Department of Health at 701.328.5166.



Printout from an automatic tank gauging system showing the status of the liquid sensor in a double-walled tank. L1, L3, L5 and L7 are tank sensors. The others are piping sump sensors.

## Visual Monitoring

If a double-walled tank is monitored for leaks using visual monitoring, the operator must manually check the tank's interstitial space every month for fuel or water. The date and results of the visual inspection must be logged or recorded as proof that leak detection is being performed. To find the interstitial access, an operator should look for a round, flat metal cover, usually about a foot in diameter, located in the concrete pad over the top of the tank(s). The cover may be marked with a triangle, or it may have no identifying markings on it. When the metal cover is removed, the operator will find a cap that seals the top of the pipe that leads down into the tanks interstitial space.



Access covers to the tank interstitial spaces are usually flat metal plates about 8 to 12 inches in diameter. They may be marked with a triangle or have no markings at all.

## ***Visual Monitoring***

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The following steps should be used to visually check the interstitial space of each tank:

- Apply water-detecting paste to the bottom inch of one side of a CLEAN gauge stick.
- Apply fuel-detecting paste to the bottom inch of the opposite side of the stick.
- Insert the gauge stick into the interstitial space until it touches the bottom of the tank interstitial space.
- Leave the stick in the bottom of the interstitial space for the amount of time recommended by the paste manufacturer (usually less than a minute).
- Remove the stick and check to see if the paste has changed color. A color change in either paste indicates the presence of liquid and is evidence of a possible leak.
- If neither paste has changed color, this procedure can be used to check any other double-walled tanks on site without having to re-apply the pastes.
- When all double-walled tanks have been checked, wipe the pastes off of the gauge stick.
- Keep a log of the monthly monitoring results.



## Tank Interstitial Monitoring Log

The North Dakota Underground Storage Tanks Rules require that you keep a record that the interstitial space of your tank has been checked every month. This is an example of a log to record the results.

The form “[Monthly Interstitial Monitoring Log for Double-Walled Tanks](#)” to record your interstitial monitoring results is available at the NDDoH Underground Storage Tank Program.



### MONTHLY INTERSTITIAL MONITORING LOG FOR DOUBLE-WALLED TANKS

North Dakota Health Department  
Division of Waste Management – Underground Storage Tank Program  
Revision: 01/2012

Tank ID #: \_\_\_\_\_ Tank Size: \_\_\_\_\_

Product Held: \_\_\_\_\_

Facility Class B Operator Performing Monthly Leak Check:

Print name: \_\_\_\_\_

Method of Interstitial Monitoring (check one)

- |   |   |                                       |
|---|---|---------------------------------------|
| <input type="checkbox"/> Manual Testing     | <input type="checkbox"/> Pressure or Vacuum Gauge | <input type="checkbox"/> Vapor Sensor |
| <input type="checkbox"/> Hydrostatic Sensor | <input type="checkbox"/> Electrical Conductivity  | <input type="checkbox"/> Fluid Sensor |

Please fill in the date, initials of the person performing, and results of the monthly leak check. If manual testing is performed, indicate the results of the stick reading (i.e., dry or fuel or water detected). If a pressure or vacuum gauge is attached to the interstitial space, indicate the gauge reading. If a continuous automated system is used, indicate pass if the system has been checked to see if it is operating properly and the system confirms no leaks have occurred. Log fail if the system shows a potential leak. **Possible leaks must be reported to the North Dakota Department of Health within 24 hours of the suspected leak.**

Date Monthly Leak Check Performed (mm/dd/yy)	Initials of Person Performing Leak Check	Results of Monthly Interstitial Monitoring (for example: dry or fuel or water detected, gauge reading, pass or fail, etc.)

## ***Tank Interstitial Monitoring***

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### **What to do if visual monitoring indicates a leak?**

- Contact a service technician immediately to determine the cause of the leak.
- Report confirmed fuel leaks to the North Dakota Department of Health at 701.328.5166.

Interstitial monitoring is the only release detection method that can actually PREVENT a leak from getting into the soil or groundwater if the operator is paying attention.